The Navy and Marine Corps Magazine for Afloat and Shore Safety

SEA & SHORE

WINTER 2009-10

In this issue focus on:

Shallow-Water Blackout

(Not Just a Summertime Hazard)

The Navy and Marine Corps Magazine for Afloat and Shore Safety

SEA & SHORE

WINTER 2009-10

Vol. 12, No. 1
December-February 2009-10

Sea&Shore (ISSN 1550-1434) is published quarterly by Commander, Naval Safety Center, and is an authorized publication for members of the Department of Defense.

COAST GUARD: Send address changes or requests for more copies to Commandant, USCG, CG-113, U.S. Coast Guard Headquarters, 2100 2nd St., S.W., Washington, DC 20593.

MARINE CORPS: To be added to *Sea&Shore's* distribution list, increase or decrease number of copies, or take yourself off the list, see your unit publications clerk and have him access MCPDS. *Sea&Shore's* PCN is 74000001900.

POSTMASTER: Send address changes to: Commander, Naval Safety Center
Attn: *Sea&Shore,* Code 71A
375 A Street, Norfolk, VA 23511-4399

Send articles and letters to the address above, or e-mail the editor, kenneth.testorff@navy.mil. Visit us on-line at www.safetycenter.navy.mil.

FEAT

URES

DEPARTMENTS

FRONT COVER

A young woman free dives.

Few, if any, statistics exist on shallow-water blackout, but the Internet, including the Naval Safety Center website (www.safetycenter.navy.mil), is rife with stories of skilled swimmers who succumbed to SWB. *(Drowning statistics, however, are available. For FY05 through FY09, there were 29 USN and 11 USMC off-duty/rec drowning deaths reported. There also were 8 USN and 20 USMC operational drowning deaths reported during the same period.)* The Navy became concerned enough about SWB a few years ago that commanders were directed to tell their people about the dangers and to post warnings in all swimming areas.

Victims of SWB usually lose consciousness within 15 feet (five meters) of the surface, where expanding, oxygen-hungry lungs of breath-hold divers literally suck oxygen from their blood. The blackout occurs quickly, insidiously, and without warning. Victims *(as depicted in staged photo above)* die without any idea of their impending death.

Learn more about the dangers of breath-hold diving, starting on page 2 and continuing through page 7.

STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION 01 October 2009
The United States Postal Service requires all publications publish a statement of ownership, management and circulation.

Date – 01 October 2009
Title of Publication – Sea&Shore
ISSN – Publication No. – 1550-1434
Frequency of Issue – Quarterly
Location of Office of Publication
Commander Naval Safety Center
375 A Street
Norfolk, VA 23511-4399

Publisher – U.S. Navy
Editor – Ken Testorff
Owner – United States Navy
Total no. copies printed – 28,607
No. copies distributed – 28,357
No. copies not distributed – 250
Total copies distributed and not distributed – 28,607
Issue date for circulation data above – Fall 2009

FOCUS

The Facts About Breath-Hold Diving

Navy photo by PH1 Alan D. Monyelle

Safe breath-hold diving requires an appreciation of the risks involved and strategies for protecting yourself. Here are some points for your consideration:

What we know:

Breath-hold diving has evolved from a not-so-harmless children's game into a pseudo-sport that involves trained athletes who participate in underwater breath-holding as a challenge, or to try and increase their oxygen reserve and thus their competitive edge.

In reality, hyperventilating adds very little oxygen to an individual's reserve. What it does is force carbon dioxide (that signals the brain to breathe) out of the lungs.

This technique is known to cause severe hypoxia, which produces muscle relaxation and respiratory-system suppression.

Death can occur within two-and-a-half minutes after breathing has stopped in a drowning that involves breath-holding. In comparison, death usually occurs about eight minutes after breathing has stopped in a drowning that does not involve breath-holding.

Breath-hold diving is also a popular children's activity—both static, where the children see who can hold their breath the longest, and dynamic, where they see who can swim the farthest without taking a breath. Both forms place the children at risk and increase a lifeguard's burden.

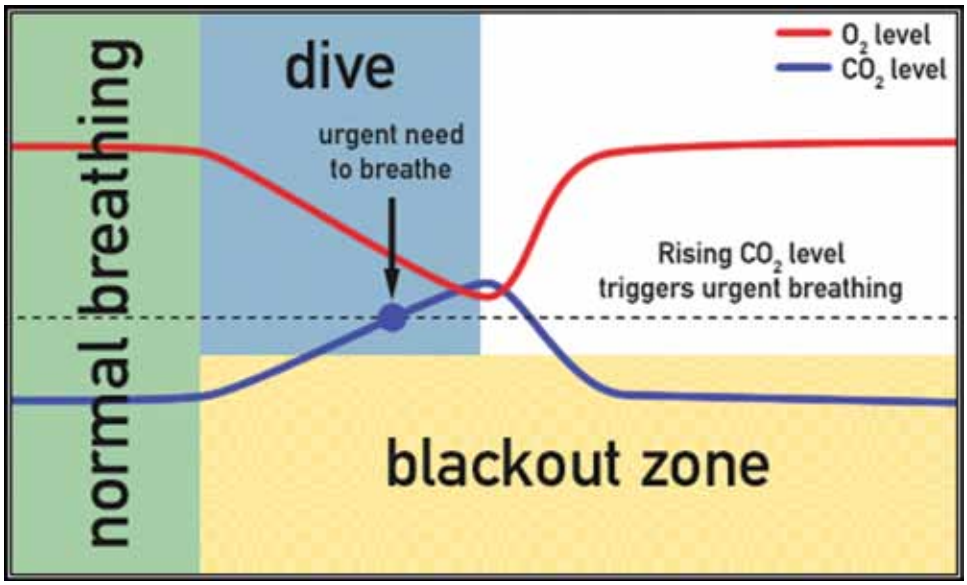
AN UNCONSCIOUS, drowning victim probably will not appear significantly different from a motionless, breath-holding person. Permitting such behavior increases the criticality of lifeguard scanning and decreases the level of safety in a pool.

Anyone who practices competitive and repetitive underwater breath-holding is at risk for shallow-water blackout.

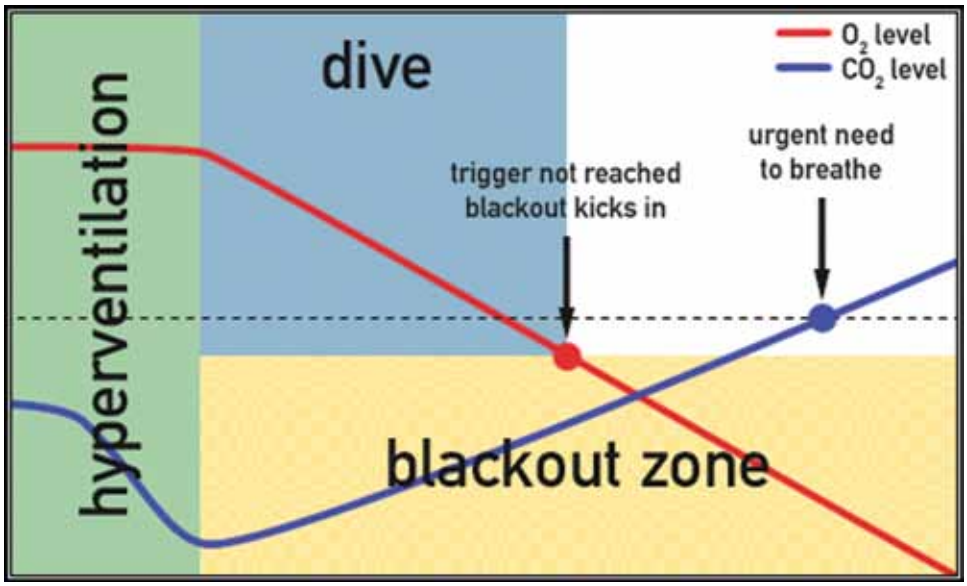
What we don't know:

How many programs endorse and/or allow underwater breath-holding.

How many individuals (swimming coaches, athletes, and employees) are educated properly.



This graphic shows the O_2 and CO_2 levels in a diver's blood over the duration of a safe dive. The green area shows the stabilization of O_2 and CO_2 through normal breathing before the dive, which ends safely when the diver is forced to the surface by an urgent need to breathe.



In this graphic, hyperventilation before the dive has artificially depressed CO_2 levels, without elevating the O_2 level. Hence, this pre-dive state is likely to result in shallow-water blackout. Note how the O_2 level drops into the diver's blackout zone before the CO_2 can rise enough to force the diver to resurface and breathe. The dive is extended a little, but this diver may not survive.

How many pools actively correct children who play such games.

What must be remembered:

The dangerous practice of underwater breath-holding should not be implemented in any type of aquatic swim program. It also should be prohibited in all lap, open, public, or family swim sessions.

All types of breath-holding are dangerous and should be prohibited, including static, dynamic and hypoxic training.

Hypoxic training and hyperventilation do not have to occur for shallow-water blackouts to occur. Kids playing breath-holding games and swimmers swimming as far as they can underwater also are dangerous activities and should be prohibited.

Any vigorous exercise done underwater will limit the amount of time one can stay underwater. Swimmers should be encouraged to head to the surface well before their limits are exceeded.

The risks of shallow-water blackouts should be explained to children, along with how breath-holding games can lead to blackouts.

It's important to increase awareness of the potential risk factors associated with underwater breath-holding.

An increase in carbon-dioxide levels will signal the brain that it's time to breathe. Hyperventilating depletes the carbon-dioxide level, which fools the body into believing it doesn't need oxygen and can lead to a loss of consciousness, which can result in death.

Teaching material should be updated to increase awareness of why this practice should be prohibited.

It's highly encouraged that swimming coaches, lifeguards and all hands be educated on the possible risk factors associated with this technique.

Shipmates Who Became Victims

Hyperventilation is so dangerous that the *U.S. Navy Diving Manual* issues a specific warning in red about it, and professional aquatics organizations caution against it. One latter critic is Gary Thill, editor of *Aquatics International*, the only publication devoted exclusively to the commercial and public swimming-pool industries. He said, "Breath-holding is the No. 1 cause of swimmer deaths in this country; yet, we do little, if anything, to stop it, and, in many cases, we encourage it with hypoxic training. This is a practice that must be stopped NOW!"

Here are some incidents that highlight the dangers of this practice:

A Sailor died while practicing breath-holding in an MWR pool. After swimming the length of the pool underwater, he descended to the bottom of the diving well to see how long he could hold his breath. A buddy became alarmed about the length of time he had been underwater and dove down to check on him, but the Sailor waved him off. A subsequent check found the victim unresponsive, and he was brought to the surface, where CPR was started immediately but without success.

An instructor-trainee was observing a free-swimmer-ascent-training event at a depth of 25 feet when someone noticed he was motionless near the bottom of the training tank. Personnel brought him to the surface but could not resuscitate him.

A BM1 attended a luncheon with colleagues and drank one or two beers before heading home for his usual swim in the pool. Soon, some neighborhood kids came over, and he spent about two hours teaching them how to swim underwater. The last time the BM1 entered the pool, the kids noticed he went to the bottom and wasn't moving. They subsequently called the neighbors, who, in turn, called 911. Paramedics arrived and tried to revive the BM1 but ended up pronouncing him

Basic underwater demolition/Seals (BUD/S) students swim 100 meters with their hands and feet bound as part of their first-phase swimming test. This test is used to determine how comfortable each student feels underwater.

Navy photo by MC2 Shauntae Hinkle

dead on the scene. Hyperventilation and extended breath-holding contributed to his death.

A chief petty officer, reportedly a skilled swimmer, was known to practice breath-holding to extend the amount of time he could stay submerged. He died while alone in a base pool. With no visible trauma to his body and no history of heart problems, it was determined he likely was trying to see how long he could hold his breath underwater. Unfortunately, no one was at the pool to help him when he experienced difficulty.

A sophomore at the U.S. Naval Academy fell victim to shallow-water blackout while doing breath-controlled laps in a yacht club's pool. According to the victim's father, he was trying to go 75 meters underwater when he passed out and went to the bottom. Lifeguards jumped in, pulled him out, and performed CPR until medical personnel arrived and took him to a hospital. Doctors, however, were unable to save him.

THE VICTIM was a member of the Naval Academy's swim team. His coach said he had told everyone not to hold their breath too long underwater without his supervision or that of another senior academy-swimming instructor. No one was supervising the victim the night he died. During practice, swimmers weren't allowed to go farther than 25 meters underwater.

The only safe way for swimmers to increase their endurance is through aerobic activity.

Protect all hands from the hazard of hyperventilation and breath-holding, including Sailors preparing themselves for diver or basic underwater demolition/Seals (BUD/S) training, by briefing them periodically on the grave risks involved.

Shallow-Water Blackout: It's No Joke

By LCdr. Douglas Chandler, USN(Ret.)

It's a beautiful, bright, sunny, summer day—the temperature is 85 degrees, and there is a light breeze. You're at a pool party with your family and friends. The kids are splashing and having fun swimming, diving and playing games. A group of teenage boys are in the deep end of the pool, seeing who can stay underwater the longest while swimming down to the drain 12 feet below.

You see these boys taking multiple deep breaths and hyperventilating to increase their air-storage capacity, but you think nothing about it and continue enjoying the beautiful day. A few minutes later, you realize that one young boy has been underwater a long time. The kids think he's joking by lying still deep below. Although the boy appears to be moving, something doesn't look right. An adult dives into the pool and finds the boy isn't joking. He requires CPR, which paramedics administer as they take him to a hospital.

The victim ends up with a sore chest but resumes a normal life after a few days of hospitalization and intensive care. This situation could have ended a lot differently, though.

Hyperventilation actually decreases the body's natural stores of carbon dioxide (CO_2), while adding very little to its oxygen reserves. The common misconception is that the drive to breathe is triggered by a lack of oxygen. However, the level of CO_2 in the blood is a much stronger stimulus that prompts the breathing reflex.

By hyperventilating and blowing off excess carbon dioxide, the swimmer loses that respiratory drive and blacks out from hypoxia (a lack of oxygen to the brain). Swimmers in this unconscious state often will fool observers because they don't appear to be in danger. Rather, they appear to make coordinated movements. At this point, though, physiological brain damage, cardiac arrest, or death from a lack of oxygen is only minutes away. Even if they are saved from death, the brain damage often is irreversible.

Here's how you can avoid shallow-water blackout:

- Don't hyperventilate.
- Recognize that any strenuous exercise you do while underwater drastically will limit the time you can stay underwater. Head for the surface much sooner.
- Include shallow-water blackout as a topic before all training for water activities.
- Explain (in simple terms) to children at a young age what SWB is and why they never should practice breath-hold diving. S

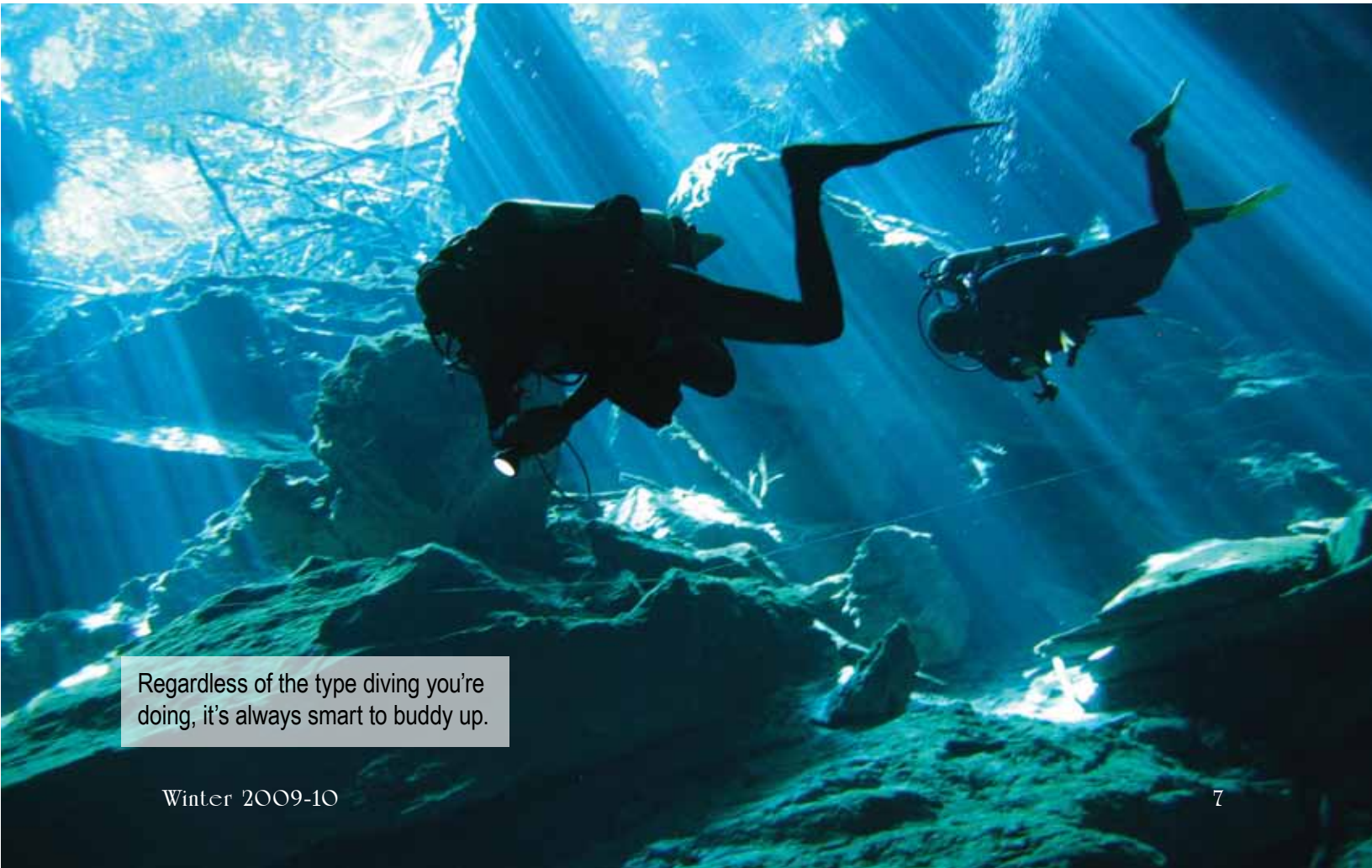
This article is a slightly revised version of one that first appeared in the winter 2001-2002 issue of Ashore, *a forerunner of the current* Sea&Shore. *The author was assigned to the Naval Safety Center at the time he wrote the original story.*

Tips To Avoid Becoming a Victim

The national average victim of shallow-water blackout is a 15-to-40-year-old male, who is experienced at freediving and who feels confident in his ability. He regularly practices hyperventilation at the surface to extend his dive time.

Here are some things you should do to avoid becoming a victim:

- **Buddy up.** Choose someone with comparable skills to your own and whom you trust to watch you closely from the surface while you dive. Take turns on deep dives.
- **Breathe sensibly.** The U.S. Navy guidelines limit divers to two or three deep breaths before a dive. More than this number of deep breaths critically lowers your CO_2 levels—the trigger that tells your body it's time to breathe.
- **Take your time.** Japanese pearl divers have practiced deep, breath-hold diving in relative safety for thousands of years. Their secret is only staying down for a minute or two and taking time to recover at the surface.
- **Don't overexert.** Your dive time will be decreased by exercise. Come up sooner if you engage in strenuous activity underwater, and take time to recover fully before diving again.
- **Weight properly.** If you wear a weight belt, weight yourself for neutral buoyancy at 30 feet to ensure you will float to the surface in a blackout. If you feel at risk, immediately ditch your belt to increase your chances of surfacing safely.
- **Know basic CPR.** Know what to do in an emergency. Blackout is considered a near-drowning, and all victims should be taken to an emergency room for treatment.



Regardless of the type diving you're doing, it's always smart to buddy up.

Our Incident-Free SRA—Not Just Good Luck

By Ltjg. William Hessell,
USS *John L. Hall* (FFG-32)

Thanks to the coordinated efforts of ship's force, the Southeast Regional Maintenance Center (SERMC), and the prime contractor, we proved you can have a mishap-free maintenance availability.

Several weeks before our availability started, we held a shipwide safety stand-down that focused on the likely hazards the crew would face. The emphasis was on personal protective equipment (PPE), electrical safety, and tagout procedures. The leadership maintained this emphasis in the weeks leading up to our selected restricted availability (SRA), as well as throughout the event.

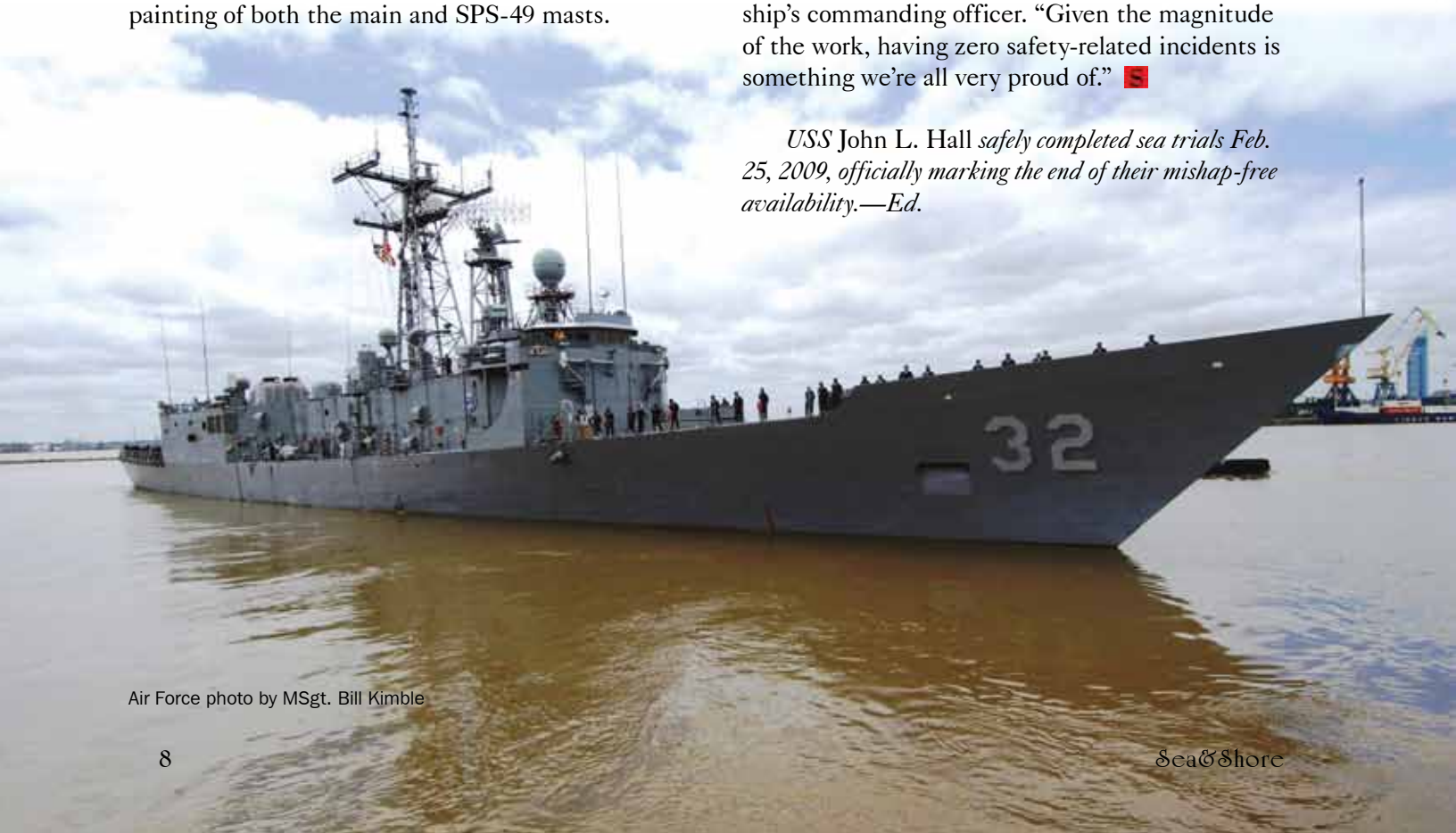
We had an extensive maintenance package, including work in all engineering spaces, the overhaul of two ship's-service diesel generators, widespread changes to the force-protection suite, overhaul of the recovery-assist securing and traversing (RAST), and painting of both the main and SPS-49 masts.

Besides the maintenance done by the shipyard, ship's personnel were divided into "tiger teams" to complete sweeping changes. These changes included installing lagging and painting thousands of square feet of ship's spaces. Tiger teams also replaced hundreds of feet of gauge line. We also prepared for ULTRA-E and ULTRA-C and conducted multiple drills each week for proficiency.

The comprehensive scope of shipwide repairs and improvements forced safety to the forefront of all operations. With the help of SERMC specialists, we held daily walkthroughs of all shipboard spaces to identify potential hazards. This cooperative effort was essential to correcting problems before mishaps could occur.

"The crew gets a tremendous amount of credit for their constant vigilance and adherence to safety procedures," said Cdr. Derek Lavan, the ship's commanding officer. "Given the magnitude of the work, having zero safety-related incidents is something we're all very proud of."

USS John L. Hall *safely completed sea trials Feb. 25, 2009, officially marking the end of their mishap-free availability.—Ed.*



Air Force photo by MSgt. Bill Kimble

Wii Will Injure You

By AM1(AW) Jeffrey Golden, VAW-121

Our squadron was on detachment in Fallon, Nev., when we decided to take the day off for a command picnic. A highlight of the day was a softball game between the officers and enlisted personnel.

Everything went well, with the enlisted players retaining the coveted command trophy. Our competitive spirits still were running high when we returned to the barracks, so a group of us started playing Nintendo Wii games.

If one of us had considered the size of the barracks room we were in and the number of people who were there, a tiny warning bell should have sounded. That didn't happen, though. Instead, we continued on our merry way.

Anyone who ever has played Wii games probably has seen the warning on the remote about health and clearance. It tells you to make sure adequate room exists for the physical activity involved.

My boxing match against one of my shipmates became heated. During our epic battle, I saw an opening and went in with a right hook, hoping it would be a knockout blow. As I stepped into the punch, however, my right hand connected with a nearby closet door. A strong, sharp pain immediately shot through my hand, up my arm, and throughout my body. I distinctly remember the remote hitting the floor and the boxing audience saying "O-o-o-h" in unison. I had missed the KO punch in the video game and, instead, had knocked myself out of the ring in the real world—game over.

My hand quickly resembled a softball. I first thought I probably just had jammed the knuckle of my pinky finger. That night, though, I took a painkiller for the swelling, kept my hand elevated, and iced it down. I figured the swelling would go down, and my hand would return to normal in no time. Seven days later, the swelling was better, but I still couldn't see my knuckle, and bruises were visible on my hand. My pinky finger also wouldn't extend fully, and I couldn't form a tight fist. I decided it was time to have a professional look at it.

Personnel at branch medical X-rayed my hand and told me I had shattered the metacarpal bone in my pinky finger. The tip of the bone was pointing at a 45-degree angle toward my palm. I was referred to a specialist, who informed me that, because so much time had elapsed (eight days at the time), the bone already had started to heal. He said if I wanted to have full grip back in my hand, I would need a pin inserted into the bone to hold it in its original position. Because I'm an aircraft mechanic and need full strength and dexterity in my hand, I had no choice but to let them drill into my hand, insert some stainless-steel pins, and give me a cast. If I had gone to branch medical right after the incident, they could have reset the bone and splinted it, and everything would have been fine.

As the squadron safety petty officer, I should have been aware of the dangerous situation in which I had put myself. I should have noticed the close proximity of the furniture, the number of people in my room, and the overcompetitive nature during the video game. S

Resources:

- Injuries Grow Along With Wii Popularity, http://www.consumeraffairs.com/news04/2007/06/wii_injuries.html
- The Risks of Playing With Your Nintendo "Wii," http://www.letsplaygamesnow.com/the-risks-of-playing-with-your-nintendo-wii
- Wii Health and Safety Precautions, http://www.nintendo.com/consumer/wiisafety.jsp

Three Sailors, Two Cars, Max Confusion (or) Buddy System Breakdown

By Derek Nelson,
Naval Safety Center

The buddy system has been around a long time and usually works well. When it doesn't, the circumstances offer a useful case study in who should have done what and when, and how minor errors can magnify to a startling extent.

The basic scenario: A trio of Sailors with two cars decide to go spearfishing. As you read the following timeline, think about what you would have done.

0900: One of the Sailors (we'll call him "the first guy") drives to the beach and waits for the others.

0930: The other two (a.k.a. "the second guy" and "the third guy") arrive in the second car. They all prepare to go diving.

1000: Two of them enter the water together. *Was the plan for each to go their separate ways? If so, that isn't much of a plan, and the buddy system now has ceased to exist. Were they going to try meeting up in the water and stick together? Why not all go in together? I apologize for my lack of knowledge of spearfishing etiquette. My only experience was writing a Friday Funnies item about a guy who made a homemade spear gun and shot himself in the hand.*

1030: The third guy enters the water.

1100: The second guy decides to leave. He gets out of the water and goes to his car. He thoughtfully moves the third guy's wallet, phone and clothing from the second car to the first one, then drives off.

1330: The first guy decides he's had enough. He gets out of the water, packs up the remaining car, and leaves for a party, where he will meet up with his buddies. He doesn't realize that the third guy is still in the water, nor that he is taking that guy's stuff.

1700: At the party, the first two divers discuss the dive trip. At some point—four hours later, to be exact—the light bulb comes on, and they realize that they have abandoned the third guy. *Perhaps the discussion went something like this:*

"So, how late did you guys stay after I left?"

"What do you mean, 'you guys'; it was only me. You two had left early."

"I left by myself."

(In unison) "Uh oh."

Their sinking feeling was matched only by that felt by the third guy when he splashed out of the surf to see both cars gone. He waited for an hour or two, figuring that his buddies quickly would realize he was unaccounted for. Then, clad in dive shorts and dive booties and lugging his spear gun, he starts hiking back to base.

1730: His buddies head back to the beach but can't find him. They call his wife (on the mainland) to see if she has heard from him. She says, "No," and starts worrying. *Not the kind of call you want on Christmas Day, is it? Oh wait, we didn't point out that it was Christmas, and they were all going to meet up at a Christmas party.*

1800: The distraught spouse calls the Coast Guard, who verifies the report with the diver's command, then starts searching. *They love doing this kind of stuff unnecessarily in the dark on Christmas.*

2330: The third guy completes his 15-mile trudge back to base, and if he was in a good mood, he's a lot more patient and understanding than I would have been. At the main gate, he notifies his command. The Coast Guard calls off the search. Someone calls the Sailor's wife with the good news.

And all because it didn't occur to the first guy to leave a one-sentence note saying that he was leaving by himself, and that he had moved the third guy's stuff to the other car. S

When Too Little Ends Up Being Too Much

By LCdr. Colin Day,
VFA-115

Winter brought plenty of snow, so three squadronmates and I decided to ski the impressive Whistler-Blackcomb resort in British Columbia. This ski area is the largest in North America and offers some of the most amazing skiing in the world. We planned our trip well in advance and had all bases covered. We were convinced nothing could go wrong; it was going to be an excellent experience.

Driving up to Whistler was uneventful, with clear roads the entire way. We had a four-wheel-drive vehicle and also carried chains, just in case. We found our lodging, enjoyed the nightlife, and rented ski gear the next morning on our way to the lifts.

The rental system at Whistler is automated; you enter your skiing ability, height, weight, and shoe size on a touch-screen. A technician uses that data to select your gear and to set the level of torque that will cause the ski binding to release and presumably protect the bones and joints in your legs from injury during a fall. The technician set my bindings at 7. I didn't say anything, even though I was pretty sure my skis in my garage at Lemoore, Calif., were set at 8. Knowing these rental skis would release with a little less torque was reassuring to me, given that it was my first time on the slopes this season.

Our first day of skiing was superb. I had one unexpected binding release, and it caused a small spill. One of my buddies had the same problem, and we surmised that the technician must have been a little more conservative with the binding settings. We also figured this wouldn't be a big deal—better to have the ski come off earlier in a fall than not to have it come off at all, right? Eight to nine inches of fresh snow fell that night,

The victim awaits his toboggan ride to the Whislter medical clinic *(see inset for a look at his injury).*

which made for an even better second day of skiing—up until about 11:30 that morning. Cue the suspenseful music.

About 30 seconds after aggressively skiing an intermediate run, we joined a very flat beginner run that coasted to the chairlift we were using. As I went over a small bump, my left binding released unexpectedly, and I immediately fell to the left. I remember thinking as gravity sealed my fate, "Great, the guys really are going to give me heck for this... ." I wish it had worked out that way.

I rolled violently once or twice on impact and felt what I thought was a twisting in my left knee. I sat up, collected myself, and began to assess if I really did have a twisting injury. The first thing I saw was a 6-inch gash in my ski pants on the anterior side of my left knee—a sure sign I would have to buy a new pair.

MY SQUADRONMATES shortly arrived behind me and asked if I was OK. I thought I was, but my knee felt a little strange. I was examining my damaged ski pants when I saw blood coming out the gash. Further inspection revealed that I could see farther inside one of my limbs than I ever before had been able to see inside a cut. It reminded me of those medical shows where they show surgeries in progress. I told my squadronmates to get the ski patrol.

My left knee had been the impact point of my fall, and it should have hit the snow. However, the free-wheeling ski was in just the right position (and at the perfect angle) for my knee to hit its now-upturned metal edge. With all my body weight behind my knee, the ski edge sliced into my knee, cutting through an artery, two ligaments, and the joint capsule itself. Most knee injuries in skiing arise from twisting falls in which the ski binding doesn't release—this was my 21st year of skiing, and I never had heard of an injury like this, where the ski had released.

My squadronmates and the ski patrol worked with me to stop the blood loss, and I was tobogganed to the Whistler medical clinic, where a doctor sewed up the artery and laceration. An ambulance then took me to Vancouver, where an orthopedic trauma surgeon repaired the sliced tendons and cleaned my knee capsule. I received crutches, a full leg brace, and orders for no flying for at least four months. I was told to wait six months to a year before engaging in ballistic athletic activities, like running, and up to a year for, dare I say it, skiing. I was flabbergasted.

This experience taught me a number of important things. First, I should have been wearing a helmet, although I've never skied with one. I assure you I will buy one before my next ski day—whenever that is. The idea that my ski could have hit my head, instead of my knee, is horrifying.

Second, I should have taken my skis back to the rental shop after the first early binding release and had them readjusted. After this incident, I was able to determine that my DIN setting indeed should have been 8, not 7. This difference was minor, but perhaps my ski would have stayed on had the bindings been just a little tighter.

Third, I learned the value of skiing with at least one other person. I tend to ski fast, ahead of other people at times, but having the company of my squadronmates was invaluable in this incident.

Finally, I learned the ins and outs of the Tricare system—specifically, that you will pay up front for any medical services provided in a foreign country.

I urge skiers who read this article to keep enjoying the sport. I certainly will, once I'm fully healed. However, look at what you're doing, and see if there's room for an enhanced safety margin. No matter how experienced you are at the sport, foundational ORM tools, such as using PPE and avoiding unnecessary risks, still apply. You may not be able to avoid every source of risk or injury, but you certainly can apply the lessons of my experience to minimize your exposure to them.

See you on the slopes next season!

Resources:

- Ski Safety, http://www.sportsknee.com/sports.htm
- Skier Safety Tips, http://skiing.about.com/od/safetyforskiers/a/skisafety.htm
- Standards Aid in Snow Skiing Safety, http://www.astmnewsroom.org/default.aspx?pageid=1723
- How To Find the DIN (Release) Setting for Your Ski Bindings, http://www.rosswalker.co.uk/din_setting/
- Adjusting Ski Bindings, http://homeboyski.com/2008/01/15/the-importance-of-adjusting-your-bindings-correctly-part-12-let-ski-service-adjust-your-bindings/

Why Preparation Can't Make Up for a Lack of Instruction

By Lt. John Horn,
VAW-123

On a summer evening in August, I was cutting some trees in my backyard with an electric chain saw. The weather was perfect for some needed yardwork. Though I never had taken a safety course or had any real guidance on how to use a chain saw, I considered myself "handy." I was confident because I'd used one quite a bit in the past.

Before starting, I checked my saw and made sure the chain was sharp, the tension was good, and the saw had plenty of oil. I also made sure I was wearing the required protective equipment *(hand, foot, leg, eye, face, hearing, and head protection)*. As I started cutting, everything appeared to be working normally. I was about halfway through the branches I had planned to cut when I took a break and rechecked the chain's tension and sharpened it again.

I then went back to work, and while cutting through a branch, the chain saw kicked back on me. Because I never had experienced this problem before and didn't know what to do, I made a bad decision. I quickly dropped the chain saw, which kept coming back and caught the top of my left middle finger. The chain cut through the glove and into my finger's joint, separating the tendon from the bone. In shock, I ran inside the house and had my wife rush me to an emergency room.

I had to undergo reconstructive surgery to repair my left middle finger *[see inset photo of what his finger looked like afterward]* and was grounded from flying for six weeks. As a result of my lack of training and poor technique, I made a very critical error here that easily could have been prevented.

When a chain saw kicks back, you should keep a tight grip on it with both hands and let the guard do its job to protect you. An equally valuable lesson is that no matter how prepared you think you are, it's no substitute for proper instruction. Don't take power tools of any kind lightly. In the future, I'll make sure I'm trained and qualified to use tools before I try using them.

Resources:

- Chain Saw Safety Tips, http://www.fema.gov/news/newsrelease.fema?id=19672
- Chain Saw Safety Tips, http://www.osha.gov/Publications/3269-10N-05-english-06-27-2007.html
- Fact Sheet: Using a Chain Saw Safely, http://www.redcross.org/pubs/dspubs/chainsaw.pdf

"Challenging" Ride Kicks Biker's Butt

By Lt. Joseph Brogren, VAW-112

Memorial Day 2004 was one I'll never forget. It was the last weekend on the beach before a three-week, at-sea period, and I was up early to load my mountain bike on the car to enjoy the last few days outdoors. I had checked out a few trails online the night before because I wanted to try something new. I was getting used to the single tracks just east of our base at Point Mugu, Calif.

The original plan to hike around Lake Arrowhead had fallen through because my usual riding partners opted to spend their last weekend at home with their families. Despite this change, I was determined to get something out of the weekend.

After an hour's drive on U.S. 101 and a few detours to find the trailhead, I gave my bike a quick once-over to ensure it was ready for a great day of riding. Most of the riding I had done in the last few months had been on a road bike to get ready for a race in July, so I took a few minutes to get warmed up and reacquainted with how differently a mountain bike handles. To add to the relative unfamiliarity, I just had installed a front shock. This ride would be only my third one with the new suspension, and I still was getting used to it.

The website rated this trail as being "challenging," and I wasn't disappointed. I barely could see the single track toward the top as it snaked up the side of the mountain. For most of the ride, it looked like I would have the wall of the mountain on my right and an almost shear cliff on my left. It was going to be a bear on the way up, but the ride down would be the reward.

I recognized the trouble I'd be in if I got too close to the side, so I stayed well inside the right of the trail. Only 30 minutes into the ride, I already had seen a few more rocks on the trail than expected. They were about the size of basketballs, which started making the ride even more taxing—nothing I couldn't handle, though.

The real test was about to begin. After a quick plateau in slope, I geared up for another climb. The next one looked like it was going to ascend, turn, and get even rockier—all at once. My front tire hit a rock, so I slowed down to a near-stop, a move I had practiced before. If I couldn't keep my balance while stopped and then transition to a forward pedal, I'd quickly but smoothly kick out my heel to get out of the clipless pedals—God's gift to bike riders. These pedals actually clip your riding shoes to the bike, making climbs and accelerations easier and more powerful.

I started to lose my balance to the left, but, for some reason, I kicked out with my right foot first, no doubt because I favor that side after dislocating my left elbow in a previous riding accident. I was seconds away from suffering through my second one.

Like a bad dream I couldn't wake up from, I started tumbling end-over-end down the side of the mountain. My arms scrambled like crazy to find anything to grip and to slow my fall. I tumbled for a few seconds and, then, for an instant, all the noise stopped, and I knew I was free-falling. My last thought before hitting the ground was wondering if I was going to die.

After hitting the ground, my next thought was, "Where is my bike going to fall?" I didn't need that heavy piece of debris falling on me after the beating I just had taken. Thankfully, the bike had stopped about 10 feet higher upslope.

I didn't even know where to begin to start checking myself for injuries. Besides a deafening ringing in my ears, my left shoulder was

numb, my left forearm felt wet, and my mouth was filled with dust—not a bad start, considering what I had expected. After I managed to stand up, the edges of my vision became very bright. I steadied myself against a rock and decided I shouldn't take off my helmet yet. Several hundred feet of drop-off still was below me; if I somehow lost my balance, my ride might not be complete.

With my vision returning to normal, I tried to look at the back of my left arm to see how badly I was bleeding. It was then I realized my shoulder was dislocated. Above me was shear rock; below me were unsteady rocks and boulders. With one bad arm, I had no way to climb up, and, with riding shoes on my feet, it probably wasn't a good idea to try walking down. In short, I needed to make a phone call.

Before I had pedaled away from my car, the last item I put in my backpack was my cellphone. I had considered not taking it because I initially felt there was a good chance I wouldn't have a signal once I got into terrain. Then it had occurred to me that my signal actually might improve when I started to climb, so I took the cellphone.

It was no small effort to slip my pack off with a dislocated shoulder, but getting my phone out was the first step to getting rescued. About an hour after giving a rough description of my location to dispatch, I started feeling a little cold. It was a warm, sunny day, so the breeze off the ocean was cooling me down, or I was going into shock. Having dislocated an elbow two years earlier, I remembered that once the joint became immobile, it would become very stiff, making it almost unbearable to move. I stayed on my feet and tried moving my arm around in very small motions to prevent any stiffness.

ABOUT 90 MINUTES after I fell, I started hearing a helicopter. Unfortunately, I wasn't going to get my first helo ride—the plan was for the helo just to find me. I knew it was going to be a long afternoon and hoped it only would be a few hours until I was in a hospital.

I soon found out it's true what they say, "Under stress, your training takes over." Some of my survival training kicked in, and, once I had my eyes on the helo, I was calling dispatch to tell the helicopter to "slow down, look low, 9 o'clock left." I started spinning my red biking jersey in the air with my good arm to get their attention. However, I would have to wait another hour or so for the EMTs from the Montecito Fire Department to rappel down and rescue me. After strapping me to the board and giving me a shot of morphine, they hauled me up the side. I'm still amazed, given the slope, at how the EMTs were able to rescue me and climb at the same time.

After a short ambulance ride, several X-rays, and an MRI, I had the full diagnoses: dislocated shoulder, broken right wrist, and a broken neck. I knew I was going to miss the next at-sea period and was beginning to worry about my ability to lead a normal life, much less go back to flying. To my amazement, I walked out of the hospital three days later. In another six months, I was cleared to fly. I left my mountain-biking career at the bottom of that mountain.

A mishap never is expected, but I have to blame myself for a lack of ORM. First, my decision to go mountain biking by myself in unfamiliar territory wasn't smart. Second, it's not a good idea to tackle a tough trail after being off a mountain bike for so long—especially one with a brand new suspension, which caused the bike to handle differently. Getting back up to speed on my usual trail or an easier one would have been the way to go. Finally, I should have practiced dismounting from the pedals for a quicker jump off the bike when I started to lose my balance.

My helmet saved my life. A few weeks after my incident, I checked the helmet to see how my head would have fared had I not been wearing the helmet. The top was caved in, and a huge chunk was missing from what was covering my left temple. The most ominous thing about this story was that, after falling and getting to my feet, I noticed another helmet on the rocks from an earlier accident. I asked the EMTs if the helmet was from another rider. According to them, I was the fourth rider to have gone over at that exact spot: Two were going downhill, and the other was going up.

My advice: Avoid all trails off Sheffield Exit near Santa Barbara, Calif. S

Resources:

- Mountain Biking Safety & Injury, http://mountainbike.about.com/od/safetyinjury/Mountain_Biking_Safety_Injury.htm
- Mountain Bike Protective Gear Guide, http://www.wrcc-in.org/resources/Wabash_Mountain_Bike_article%5B1%5D.htm
- Mountain Biking Safety Tips, http://www.mountain-bikes-biking.com/riding-and-touring/mountain-biking-safety-tips/

Safety Rodeo
Lassos Fun-Loving Sailors, Civilians

By Clark Pierce,
Editor, *JaxAirNews*

Service members from northeast Florida and south Georgia converged on NAS Jacksonville May 12, to take part in the fourth recreational-safety rodeo at the base-commissary parking lot. The event showcased the latest safety information related to motorcycles, bicycling, ATVs, boating, personal watercraft, scuba diving, and other recreational activities.

The rodeo kicked off with a group motorcycle ride, led by NAS Jax Police Department and the Jacksonville Sheriff's Office (JSO) Motor Unit from the Target parking lot, down Roosevelt Boulevard to the main gate, and through the base. Event organizer Connie Policastro, a motorcycle-safety instructor at the NAS Jax safety office, welcomed more than 60 riders from NAS Jax; NSB Kings Bay, Ga.; and NS Mayport.

"May is motorcycle awareness month, and today's event shows the commitment of our Sailors, DoD civilians and retirees to enjoying accident-free riding every day," said Policastro.

The riders demonstrated low-speed, tight-turn maneuvers that most people think are impossible with large motorcycles. As the group arrived in the commissary parking lot, NAS Jacksonville Commanding Officer Capt. Jack Scorby Jr. welcomed them by talking about the critical need for recreational safety awareness.

The rodeo was a safety stand-down, in which Sailors signed in for their safety passport and visited information booths.

Besides the motorcycle-riding-skills demonstrations, events included a simulated motorcycle-accident response by the Jacksonville Navy Metro Fire and Emergency Services, as well as a Jaws of Life® extraction. Representatives also were available from the Florida Department of Highway Safety and Motor Vehicles FLOWmobile, Florida Fish and Wildlife Conservation Commission, No-Zone Truck, and the Jacksonville Sheriff's Office Marine Patrol.

Fried Green Honda

Story and photos by Steve McCombs

My wife and I were arriving home one Friday when the cellphone rang. It was our oldest daughter, telling us her house was on fire.

She wasn't home that scorching July afternoon when the fire began, but her boyfriend, Mike, was. What saved his life were smoke detectors and a fire door between the kitchen and garage.

Mike is a music teacher and was preparing some material for one of his private pupils when he heard the alarm. He went to investigate but wasn't too concerned at first, he told me later. The alarm had gone off before—probably the result of my daughter's cooking. But when he saw smoke coming under the door from the garage, he quickly changed his tune.

Mike carefully touched the door and, feeling the heat, had the good sense to get out of the house. He grabbed the cats and hustled out the front door. Unfortunately, he didn't take time to slip on a pair of shoes, so when his bare feet hit the sizzling hot cement, he suffered second-degree burns.

IT TOOK FIVE FIRE ENGINES to extinguish the blaze, which started in the garage—"likely from an electrical problem," said the fire captain. The blaze gutted the garage, breached the roof, and

almost had gone through the fire door between the garage and the kitchen. Mike's car, parked in the driveway about 4 or 5 feet from the garage, was burnt to a crisp all the way back into the passenger compartment. The fire also had gone into the HVAC (heating, ventilating and air conditioning) system, so every room in the house was damaged slightly.

The emergency-repair crew took four hours getting there to board up the place. Meanwhile, my wife and I spent a miserable evening loading up my truck with a large number of items to store in our garage. By the time we had unloaded everything, we stunk like a wet ashtray—not the way my wife and I had envisioned spending Friday evening, with a full day's plans already made for Saturday.

Luckily, nothing was lost that can't be replaced, and the insurance will repair the house. I also have something to needle my future son-in-law with: "Shoes, Mike, shoes!"

If you're one who doesn't check your smoke detectors on a regular basis, remember this story. *[We also recommend that you read the sidebar that follows.—Ed.]* If you don't have a fire door between your garage and the house, I urge you to make the investment.

The author was the safety manager at NCTC Port Hueneme when he wrote this article.

Resources:

- Smoke Alarms, http://www.usfa.dhs.gov/citizens/all_citizens/home_fire_prev/alarms/
- Test All Smoke Alarms (Detectors) and Annually Replace Batteries..., http://www.cpsc.gov/cpscpub/pubs/5077.html
- Fire Prevention Resources, http://safetycenter.navy.mil/toolbox/fire/default.htm

Replacing Home Smoke Detectors

Replacing batteries in home smoke alarms is a common ritual the first Sunday in November as daylight savings time ends. But, if the smoke alarms in your home are more than 10 years old, the National Fire Protection Association (NFPA) recommends replacing them, as well.

Why? According to the NFPA, aging smoke alarms don't operate as efficiently and often are the source for nuisance alarms. Older smoke alarms are estimated to have a 30-percent probability of failure within the first 10 years. Newer smoke alarms do better but also should be replaced after 10 years. Finally, NFPA urges people to replace smoke alarms when moving into new homes unless they know the alarms are new.

Properly installed smoke alarms give an early, audible warning to help you safely escape a fire. That's critical because 84 percent of all fire deaths occur in the home, and most occur at night when people are sleeping. In 2007, NFPA documented 2,865 home fire deaths.

Based on a 2008 telephone survey, 96 percent of U.S. homes had at least one smoke alarm. But as of 2007, 43 percent of the home fires reported to U.S. fire departments and 63 percent of home-fire deaths still occurred in the small share of homes with no smoke alarms. Half of the deaths from fires in homes equipped with smoke alarms resulted from the smoke alarm not sounding—usually because the batteries were dead, missing or disconnected.

Simple steps like maintaining smoke alarms and replacing older ones help diminish the possibility of fire deaths in the home. Smoke alarms in the home are largely responsible for the decreasing number of fire deaths during the last few decades.

NFPA offers these smoke-alarm safety tips:

• Install new batteries once a year or when the alarm chirps to warn that the batteries are dying.

• Test units at least monthly, using the test button or an approved smoke substitute. Don't use an open-flame device because of the danger the flame poses.

• Clean the units according to manufacturers' instructions.

• Place smoke alarms outside each sleeping area and on each level of the home, including the basement. Mount alarms on the wall, 4 to 12 inches from the ceiling. Ceiling-mounted alarms should be positioned 4 inches away from the nearest wall. On a vaulted ceiling, be sure to mount the alarm at the highest point of the ceiling.

• In new homes, smoke alarms are required in all sleeping rooms, according to the NFPA.

Home Project Gone Bad

By SK2 Jason Lamarsna,
VAQ-139

Late one evening, I was in my garage, working on a project for my house. The job required engraving a design into a piece of wood with a router and then ripping the piece in half with a table saw. Sound easy?

The engraving of the wood went as planned. I set up the table saw, intending to make two cuts to rip the piece in half. With the guard removed, I raised the blade to three inches. The first cut was uneventful. I then rotated the piece and started feeding it into the exposed blade for the second cut. Moments after the blade touched the wood, it bound between the fence and the blade and then was flung across my garage. When the wood kicked back, it pulled my hand into the rotating blade, cutting off the tip of one finger.

For those who use powerful cutting tools, it's important to remember that safety guards are installed for a reason; it's not smart to remove them. Further, always wear the appropriate protective gear. The moment you lose respect for the tools you use is the same moment a mishap is likely to occur. The lack of adherence to safety measures cost me a day with orthopedics, two days sick in quarters, and 14 days of light duty.

Resources:

- Two Dozen Table Saw Safety Tips, http://www.woodcraft.com/articles.aspx?articleid=317
- Production > Table Saws, http://www.osha.gov/SLTC/etools/woodworking/production_tablesaws.html
- Rip Safely With a Table Saw, http://www.rd.com/17672/article17672.html
- Table Saw Safety, http://www woodworkingtips.com/etips/etip24.html

TOO FAST, TOO

By Lt. Frank "BIFF" McBride,
VAQ-136

When I received last-minute orders to Japan, I was less than thrilled. After all, who would want to leave behind an established life in the beautiful foothills of the Cascade Mountains, characterized by open scenic roads that would put a smile on any car enthusiast's face? With orders in hand, I reluctantly decided to sell my beloved torch-red Corvette Z06. As any "Corvette-phile" will tell you, selling a Vette is a hard and very bittersweet thing to do.

Only a year later I would make another decision I'd come to regret. It involved an iconic Japanese sports car that has spawned a cult following in both Asia and the United States.

Once I arrived in Japan, I immediately joined the now-decommissioned USS *Kitty Hawk* (CV-63) on her second-to-last voyage spanning the Pacific. During those long months, I couldn't help but plan to buy a suitable replacement for my Vette and satisfy my desire for another face-distorting thrill-machine. I always had been enamored with the Mark IV Supra twin turbo, given its massive potential for raw horsepower gains and sleek, sexy curves. I found a rare specimen (modified for circuit racing) upon my return to Japan and bought it.

More background: In the Kanagawa prefecture of Japan, the streets are half as narrow as Americans are used to, with a population/traffic density that rivals any U.S. city. Adding to that situation is the fact your average American driving instincts are thrown for a loop by driving on the opposite side of the road. And, too, because I belonged to a forward-deployed unit, my actual time behind the wheel was coming in two-to-three-month spurts, followed by four to six months at sea.

Last, let's toss in my inflated sense of driving prowess and actual driving experience in a car that had been altered extensively. It resembled the barely street-legal race cars in the movie "The Fast and the Furious." This scenario had all the makings of a tragic 5-o'clock traffic report.

I was leaving the base on a cold January morning and had made a left turn onto an empty road, which

FURIOUS

is an unusual sight in Japan. With an impish grin, I downshifted into second gear, so that my car's 700 fully turbocharged horses could be unleashed and harnessed by two cold rear tires. The intended effect was to launch me and the 1.5-ton steel chassis (or shall I say "precious life capsule") into speed-rush nirvana. It took only about 1.5 seconds for me to realize the immediate consequences of that decision. The smile that had been on my face was replaced with a ghastly look of instantaneous terror. My rear tires chirped violently, desperately clawing at the road for unattainable traction. They launched the car at a 45-degree angle—face first into a fence and light pole on the sidewalk *[see inset photo]*.

It's worth mentioning here that this highly modified car had a built-in traction-control system that was deactivated because of the more than 550 foot pounds of torque surging through the transaxle. This factor alone could have caused the car to spin violently off the road. Also, my seat belt failed to engage until after my left side had hit the steering column from the car slamming into the obstructions at an angle. I later found out the seat belts had been disabled; the car was altered for racing harnesses only.

So how did I manage to impact a steering wheel when this car originally was manufactured with driver- and passenger-side airbags? The modified steering wheel, which looked great, didn't contain an airbag that would have prevented the two months of pain I experienced around my left rib cage. I began to realize, after ample witnesses laughed at the passenger-side airbag deploying as advertised and the driver's side devoid of any safety equipment, that pain isn't always a physical thing.

I was in shock as I exited the crushed vehicle on my own two feet. I immediately knew how lucky I was: There were no Jaws of Life, no paramedics waiting to assess my vitals, and I still had all my extremities. More importantly, the same streets that usually are crawling with Japanese children and parents were blessedly empty, and no other cars were involved. In this best-case crash scenario, the worst part was knowing that my accident would become common knowledge and that it reeked of seriously bad judgment. Within minutes, wives and friends of co-workers driving by were snapping camera-phone images of the carnage.

MANY SERVICE MEMBERS on base are like myself: avid car enthusiasts, who take advantage of the opportunity overseas to own powerful and "souped up" sports cars like skyline GT-Rs, Silvias and Supras. The issue isn't necessarily ownership of these vehicles; it's the service members who are seduced by the speed and power that has no use on public roads, especially ones with as many restrictions as Japan. I see numerous young, talented men and women on base who invest their hard-earned money in modified cars. These cars serve one purpose in the hands of those trained to use them: driving on closed racing and drifting circuits. Most of the modifications make it illegal to transport these cars back to the United States.

I'm lucky that I wasn't permanently injured or killed, and that I didn't claim any innocent lives. I now am an honest advocate of safe driving in all its aspects. I can't stress enough that all service members (especially those in overseas commands) should discuss the merits and risks of whatever car they decide upon with their chain of command. You can't afford to skip this necessary sanity check.

Spirited driving like I demonstrated that January morning only should be performed, with experience and vigilance, on a race track, in a safe vehicle, by a professional driver! If you find yourself with a set of keys to any car or motorcycle, *especially* one that has been modified, remember to drive a little slower and a little more conscientiously.

Resources:

- Drifting and Driving Fast on Okinawa, http://www.lockergnome.com/tsilb/2007/11/25/story-drifting-and-driving-fast-on-okinawa/
- Driving on Okinawa, http://www.oconus.com/Main/aArticle.asp?88

A Lesson Learned I

By Del Tingley, CP-12 Safety Intern,
MCAS Beaufort, S.C.

It was a beautiful fall morning in Beaufort, S.C. My roommate, Sqig, and I had decided we'd spend this Saturday doing house and yardwork around our "palatial" double-wide rented trailer. This would be my last chance to help for a while because I had to leave the next morning for 30 days at Nellis AFB, Nev. With Nellis on the outskirts of Las Vegas, it just wouldn't feel right to leave all the chores to Sqig while I was sipping rum and coke at a blackjack table.

We started our inside cleaning about 9 a.m. About five minutes later, we opened a case of beer and cracked our first cold ones. What else would you expect from a couple of young, single Marine sergeants? By 11 a.m., we'd finished cleaning the bathrooms, dusting, picking up, and vacuuming. We also had finished off at least a 12-pack. It now was time to move outside.

Sqig started mowing, and I began edging and trimming. I finished first, took a beer break, and then started raking. Sqig, meanwhile, finished mowing and started bagging after having a beer break of his own. Much effort and several more beer breaks later—

Don't Remember

enough to polish off the case—found us finished with the yardwork.

By 4 p.m., a few friends had arrived. They were so impressed with our yard skills they offered to share their bottle of bourbon with us. We accepted, and the five of us sat on the porch, passing the bottle and talking.

We'd emptied the bottle by 6 p.m., so one of our friends suggested we go to a local club. Sqig and I were up for it. After all, why should we stop after drinking a case of beer and polishing off a bottle of bourbon in nine hours—all on empty stomachs?

I took a shower and was getting ready to go when I remembered I had to leave the next morning. I told the guys to go ahead, and I would catch up with them after I got packed.

I went back inside the double-wide and started pressing my "cammies." I remember eating a sandwich in the kitchen, and then the next thing I remember was my alarm going off. A little confused, I turned off the alarm and looked around the room. I saw my neatly pressed cammies hanging on the doorknob, and my packed seabag was next to the dresser. I shrugged it off and got ready to go.

As I shouldered my seabag, I knocked on Sqig's door and told him I was ready for my ride to the air station. I walked out to his truck, threw my bag in the back, and then turned to walk back to the trailer. That's when I saw it—the driver's side of my car was smashed from bumper to bumper and was covered with yellow paint.

I freaked out and ran back inside screaming, "Sqig, what the @#%* happened to my car?" He said he had no idea what I was talking about. When I described the condition of the driver's side, he said, "Oh, that must be what you were talking about last night."

Apparently, when I finally had made it to the club, I was mumbling something about not being able to open my car door. Another friend had driven me home in my car.

I HAD TO CATCH a C-141 to Nevada, so I didn't have time to solve this mystery. Sqig said he would find out what had happened. The next afternoon, I called him, and he told me he'd figured it all out. He had retraced the route we normally took to the club, over mostly two-lane back roads. On a particularly sharp right-hand curve, I had crossed the oncoming lane, gone off the road, and sideswiped a yellow barrier pole in front of a fire hydrant.

As he described that scene, I realized a few more inches to the left would have made a big difference in my life. For openers, I would have been charged with

DUI and missing movement. I also could have been injured or killed because I don't remember wearing my seat belt. Worse still, I could have hit another car and killed or injured someone else. I was lucky to have done only about $1,000 worth of damage to my car. That was a small price to pay to learn a lesson from an event I don't really remember.

That event happened in 1991, in Beaufort. I still live here today, and the barrier pole and fire hydrant still are on that corner, too. I've pointed out the pole to my children and several friends, because it's still canted at an odd angle and is missing yellow paint on one side. I hope they learn as much from my mistake as I did. S

Provided courtesy Bob Van Elsberg, Editor, Knowledge, *U.S. Army Combat Readiness/Safety Center, Fort Rucker, Ala.*

How Drunk Was He?

Using the blood-alcohol content (BAC) calculator provided on the HealthStatus Internet Assessment website (http://www.healthstatus.com/bac.html), the author's BAC would have been about 0.20 before he started drinking the whiskey. If the five friends shared the fifth of whiskey evenly, another 0.07 would have been added to his BAC. According to the HealthStatus website, BACs ranging from 0.18 to 0.30 will cause confusion, dizziness, slurred speech, and a lack of muscle coordination. The site goes on to note that BACs above 0.25 can cause serious health issues, including death. S

Plan Now To Attend 18th Annual Safety PDC

Online pre-registration for the 18th Annual Safety Professional Development Conference (PDC) starts mid-December 2009 and ends approximately two weeks before the week-long event gets underway March 8, 2010. Hosted by NAVSAFENVTRACEN for Navy, Marine Corps, Army, Air Force, and Coast Guard, this year's gathering will be at the Holiday Inn Executive Center, 5655 Greenwich Rd., Virginia Beach, Va. 23462.

The 2010 PDC, for the first time, will include all DoD and Coast Guard safety personnel. More than 700 safety professionals from around the world are expected to attend.

This venue affords all safety professionals (both military and civilian) an opportunity to receive the most current safety information and training. This year's theme is "Safety—It's 24/7," recognizing the importance of safety beyond the workplace.

As with past conferences, all services, including the Navy Echelon 2 commands, will host break-out sessions for their activities on Monday, March 8. Tuesday will be an all-hands general session, featuring keynote and motivational speakers, followed by concurrent sessions and training seminars the rest of the week. Approximately 50 seminars, covering a broad range of safety topics, are on tap for this year.

For hotel reservations, call the hotel at (757) 499-4400 and ask for the block of rooms, using the reservation code of "Safety PDC-18th Ann." For registration, go to NAVSAFENVTRACEN's website (www.safetycenter.navy.mil/training/pdc). Submit your registration as soon as possible because attendance for each seminar is limited. S

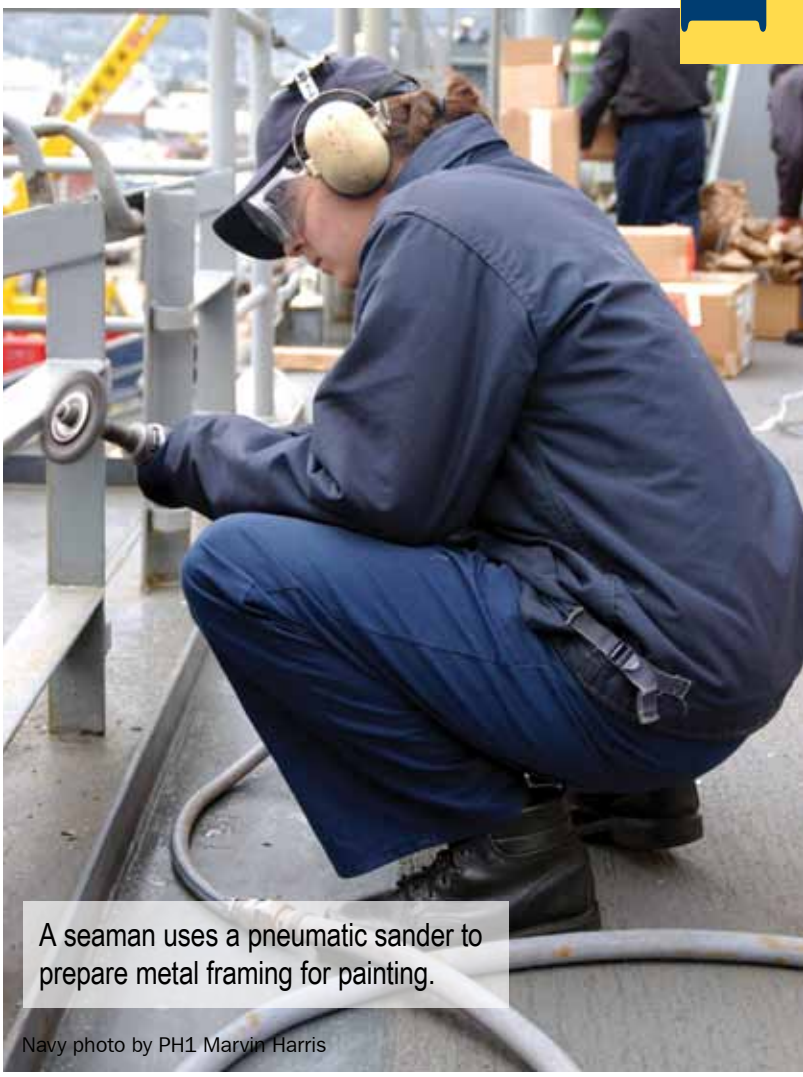
Protecting Our People From Bad Vibrations

By Mark Geiger, M.S., CIH, CSP,
OpNav Safety Liaison Office

A 1918 study by Dr. Alice Hamilton found that 80 percent of the workers in an Indiana limestone quarry were affected with hand-arm vibration syndrome (HAVS), previously known as Reynaud's syndrome—a medical condition that can lead to permanent disability. The National Institute of Occupational Safety and Health (NIOSH) studied the same operation 60 years later, in similar Indiana quarries, and found the same incidence of HAVS, with "no change in the design of the air hammers used for stonecutting." Some of the individuals NIOSH studied were the grandsons of workers evaluated in 1918.

HAVS is caused by people's hands being exposed to chronic vibration, which damages the nerves, blood vessels, and bones. Exposure to cold temperatures also increases the probability of acquiring HAVS. Most occurrences involve people who use gasoline, pneumatic, hydraulic, or electric vibratory tools, such as rivet guns and bucking bars. These tools are common in shipyards, aircraft-maintenance shops, mining, and other heavy-manufacturing or construction environments. DoD/Navy civilian, military and workers involved in defense-support operations are exposed to such processes *(see www.safetycenter.navy.mil/acquisition). [An estimated 2.5 million U.S. workers are exposed daily to some level of hand-arm vibration from the power tools they use on their jobs. Of those exposures, the prevalence of HAVs ranges from 6 percent to 100 percent, with an average of about 50 percent. —http://www.cdc.gov/NIOSH/pdfs/89-106a.pdf.]*

With inconsistent and often limited progress in eradicating, or even recognizing this problem, the Defense Safety Oversight Council (DSOC) initiated a project in 2007 to address the root causes *(see http://safetycenter.navy.mil/acquisition/vibration/downloads/Vibration_Talk_DoD_IH_Forum_2008-finalJun08.pdf).* They collaborated with the General Services Administration (GSA) and NIOSH to provide guidelines for low-vibration and other ergonomic characteristics in procurement criteria for new power hand tools. A concurrent effort worked to identify and incorporate International Organization for Standardization (ISO)-certified anti-vibration gloves into the federal-procurement process.



A seaman uses a pneumatic sander to prepare metal framing for painting.

Navy photo by PH1 Marvin Harris

A working group with DoD/GSA/NIOSH and Coast Guard members was formed. Procurement criteria for anti-vibration gloves, low-vibration

tools, and third-party certification guidelines were developed.

As of September 2009, three low-vibration hand tools had been introduced into the federal supply system:

- Pneumatic riveting hammer, described as HAMMER, PNEUMATIC, PORTABLE 5130-01-5716908. Its vibration (<2.5 m/s^2) is less than half the level created by many legacy tools.
- Pneumatic reciprocating saw, listed as SAW, RECIPROCATING, PNEUMATIC 5130-01-572-5529. Its vibration (<4 m/s^2) is less than half the level created by many legacy tools.
- Needle scaler (needle gun), listed as SCALER, PNEUMATIC, PORTABLE 5130-01-317-2453. To date, GSA has been unable to specify a maximum vibration level for this tool. However, one vendor's product, which served as a guide for the item

A Sailor uses a needle gun to chip paint from a ship's bulkhead.

Navy photo by MCSN Charles Oki

Potential HAV Exposures and Tasks Relevant to U.S. Navy

Task	Type of Tools	Remarks
Dismantlement of ships, particularly submarines	Electric and pneumatic cutting tools, grinders and electric saws	The presence of hazardous materials often prevents use of torch cutting to dismantle vessels. This forces the use of hand tools to cut metal sections. Significant vibration exposures have been associated with this work because of duration, tool size, and substrate and work postures.
Paint removal/ surface preparation	Hand grinders, needle guns, hydroblast nozzles, abrasive blast nozzles	Heavy metal lead exposure can also affect peripheral nerve conduction and may have an additive neurological effect.
Preparation of welding surfaces—pre-cleaning or smoothing after welding	Hand grinders	
Foundry cleaning departments. Removal of burrs and projections on newly cast work	Grinders, chippers	Improved quality control can reduce need for finishing and cleaning. Silica exposure also may be an issue.
Sheet metal and fiberglass work	Hand grinders, orbital sanders and polishers	
Road repair	Jackhammers	Much of the noise and vibration are associated with air-blow off and escape post tool impact. Devices controlling exhaust and recoil control exposure with minimal or no effect on productivity.
Forestry (chain saw use)	Chain saws	Tool maintenance increases safety while reducing vibration. Cold is an additional hazard to hands.

specification, reportedly had vibration levels in the range of 3.5 m/s^2, also considerably lower than many legacy products.

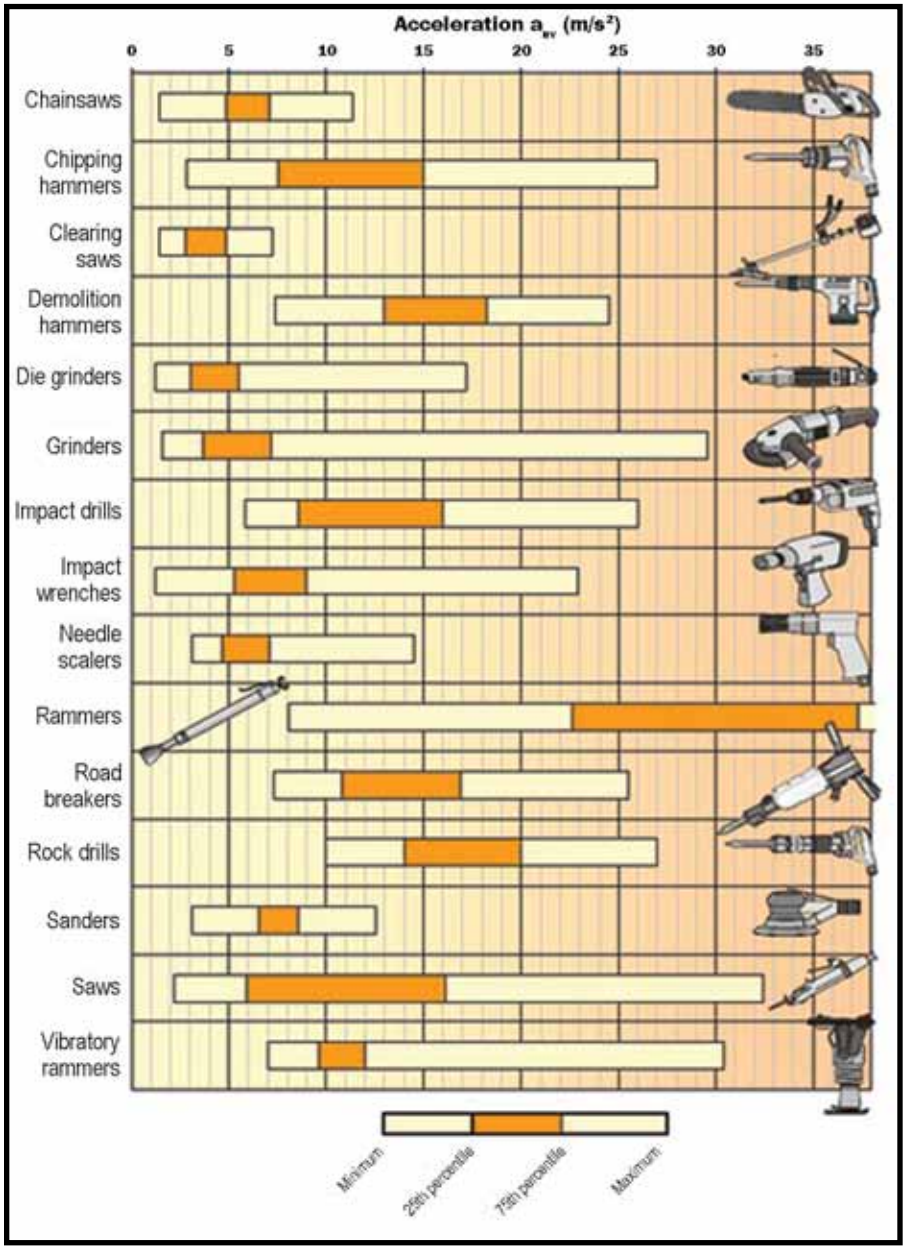
GSA is continuing to incorporate low-vibration and other ergonomic characteristics into procurement criteria for new and updated power hand tools.

Collaboration with the Navy Clothing and Textile Research Facility (NCTRF) in Natick, Mass.; the Defense Logistics Agency; and support from the office of the Secretary of Defense for Manpower, Personnel and Readiness resulted in the introduction of certified anti-vibration gloves into the federal supply system. These gloves are labeled "meets ANSI S2.73/-ISO 10819." Only full-finger protected gloves are tested since HAVS always begins at the finger tips and moves toward the palm. Finger-exposed gloves are not recommended.

Gloves evaluated by a third-party as meeting ISO-10819 criteria for vibration attenuation are called "certified" and are recommended. Products described as "half finger" gloves do not meet the ISO/ANSI standard for anti-vibration products and should not be used as "anti vibration" gloves. Using certified anti-vibration gloves alone, though, will not solve the HAV problem. These gloves should be used with low-vibration tools, in conjunction with the following practices:

- Use low-vibration tools or potentially alternative processes that reduce or avoid exposure to hand-arm vibration.
- Keep fingers, hands and body warm.
- Don't smoke.
- Let the tool do the work, grasping it as lightly as possible, consistent with safe work practices.
- Don't use the tool unnecessarily, and keep it well-maintained.
- For pneumatic tools, keep the cold exhaust air away from fingers and hands.
- Ensure breaks from tool use for at least 10 minutes per hour to allow circulation to recover.
- Depending on the intensity of exposure, it may be necessary to have exposures evaluated and to limit the daily duration of work with various types of power hand tools. European Union (EU) standards limit such exposures to an eight-hour time-weighted average (TWA) of 5 m/s^2.
- If signs and symptoms of HAVS appear, seek medical help.

Gloves are tested to ensure at least a 60-percent reduction in transmitted vibration at the key frequency range of 200 to 1,250 cycles per second (now called



Examples of vibration magnitudes for common tools (Taken from EU Guide to Good Practice on Hand-Arm Vibration, http://www.humanvibration.com/EU/VIBGUIDE/HAV%20Good%20practice%20Guide%20V7.7%20English%20260506.pdf.)

A Seabee breaks apart asphalt with a jackhammer on a road-repair project.

Navy photo by PH3 John P. Curtis

"hertz"). Since evaluation is done on people using tools in a laboratory setting, actual workplace exposures and glove effectiveness may vary. As a general rule, you should estimate that your vibration exposures, using certified anti-vibration gloves correctly, will be about 60 percent of those exposures which might be sustained without such protection.

A brochure, describing available products, listing their national stock numbers (NSNs), and showing photos is being developed. When finished, it will be posted on the Naval Safety Center's website at *http://safetycenter.navy.mil/acquisition/vibration/downloads/Anti-Vibration_Gloves.pdf*. A one-page guide for users of anti-vibration gloves also will be posted on this website and on the DoD Ergonomics Working Group website at *www.ergoworkinggroup.org*.

A limited extension of the DSOC hand-arm vibration project is anticipated. The focus will be on ensuring distribution of certified anti-vibration gloves and integrating use of available low-vibration power hand tools into requirements for key processes. Tentative processes involved are riveting during aircraft maintenance, corrosion-control processes using needle guns, and operations using power hand saws.

Resources:

- Acquisition Safety – Vibration, http://safetycenter.navy.mil/acquisition/vibration
- NIOSH Power Tools Database, http://wwwn.cdc.gov/niosh%2Dsound%2Dvibration/
- Hand-Arm Vibration Threshold Limits, http://www.ergoworkinggroup.org/ewgweb/SubPages/ProgramTools/Publications/2005Pubs/55DoDEWGNews.pdf
- Certified Anti-Vibration Gloves (photos and sources of), http://safetycenter.navy.mil/acquisition/vibration/downloads/Anti-Vibration_Gloves.pdf
- Vibration Syndrome, http://www.cdc.gov/niosh/83110_38.html
- Criteria for a Recommended Standard: Occupational Exposure to Hand-Arm Vibration, www.cdc.gov/niosh/89-106.html
- Hand-Arm Vibration: A Comprehensive Guide for Occupational Health Professionals (Industrial Health & Safety) (Hardcover), http://www.amazon.com/Hand-Arm-Vibration-Comprehensive-Occupational-Professionals/dp/0442012500
- SIMA San Diego Uses Anti-Vibration Sanders to Prevent Hand-Arm Vibration Syndrome, http://safetycenter.navy.mil/success/stories/51-100/0097.pdf

My Last Cast

After 20 years Navy active duty and nearly 28 years Navy civilian service, I'm keeping a promise I made to myself when this journey began. I said that when "the fun" of doing magazines, newspapers and other periodicals became "just a job," I'd give it up and walk away. This final editorial is confirmation that it has reached that point. I will be gone—probably by the time this issue hits the street but certainly by the time work begins on the 10th annual, spring, traffic-safety magazine.

Not everyone can say this, but I've lived my dream, ever since I graduated from high school in 1961. I said then I wanted to have a career in the Navy, and I wanted to be a writer. Both have become a reality. My experiences along the way have been priceless, but now it's time to move on to other things.

I look forward to having the opportunity to arrange my honey-do's and other chores around the house so I'm no longer rushed to get them all done over the weekend. My wife and I also look forward to doing some sightseeing around America. With no break when I retired from active duty *(I left as a JOC on a Friday and came back a civil servant on Monday)*, and having had no honeymoon *(we, of all things, did laundry on our wedding night)* when we married 38 years ago, I feel like we're long overdue in this regard.

And last but not least, I'm looking forward to spending a lot more time on the water in pursuit of largemouth bass. I thank God every day for giving me a dad who took my brother and me fishin' with him every chance he got back when we were young boys. That part of our youth didn't stick with my brother—he chose to join that cadre of men and women who chase little white balls around golf courses. But the fishin' fever stuck with me, and I just can't get enough of it.

I realize I'll have to manage my time on the water because my wife only will tolerate a certain amount. She's never let me forget the time many years ago when I dragged her and our son to a two-day bass tournament, then I had to leave early the next morning on a year's unaccompanied tour of duty overseas. To say she was upset would be a gross understatement. I always felt like I suffered enough for that poor decision by having my tourney-winning big fish leap out of the livewell at weigh-in and get away, but she never saw it that way.

In closing, please let me thank all the contributors, readers and—yes—even the critics whom I've had the pleasure of knowing over the years, going back to my early days here with *Fathom* magazine, then *Ashore*, and concluding with *Sea&Shore*. You've all played a part in protecting our Sailors and Marines, in keeping the magazines coming, and in making my job a little bit easier. As I sail off into the twilight of my life, I wish each and every one of you "fair winds and following seas." May God bless!

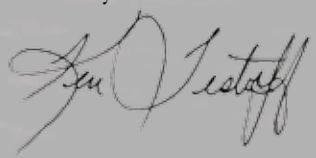


Photo courtesy California Department of Water Resources

Navy photo by PHAN Ryan O'Connor

www.safetycenter.navy.mil